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EXAMINER	
MARTINEZ, BRITTANY M	
ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

poreilly@licataandtyrrell.com

Office Action Summary	Application No.	Applicant(s)	
	10/577,709	KO ET AL.	
	Examiner	Art Unit	
	BRITTANY M. MARTINEZ	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Applicants' arguments/remarks and amendments filed on October 7, 2008, have been carefully considered. **Claims 1-13** are pending in this application, with **Claims 6-13** added. **Claims 1-13** have been examined.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. **Claims 1-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gould (*materialstoday*).

2. With regard to **Claims 1-9**, Gould discloses nanocomposite fibrils produced when a polymer solution containing nanoparticles and spider silk protein undergo electrostatic spinning. Gould further discloses altering the electronic, magnetic, biological, and structural functions of the nanocomposite fibers via utilization of different types and amounts of nanoparticles (Gould, p. 47, 5th paragraph). Gould further teaches spider silk useful in biomedical (Gould, p. 42, 1st paragraph; p. 45, 3rd paragraph) and ballistic protection (Gould, p. 42, 1st paragraph; p. 46, 1st paragraph) applications.

3. Gould does not explicitly disclose carbon nanotubes (**Claim 1**); 1% to about 10% by weight carbon nanotube and 8% to about 20% by weight of the spider silk or silkworm silk (**Claim 6**). However, carbon nanotubes are a well-known nanoparticle in the art, and it would have been obvious to one of ordinary skill in the art to modify the

nanoparticle taught by Gould with carbon nanotubes because one of ordinary skill in the art could have pursued the known potential nanoparticle options within his or her technical grasp with a reasonable expectation of success. Further, with regard to the carbon nanotube and spider or silkworm silk weight percentage range of **Claim 6**, an expected component amount is a result effective variable since one of ordinary skill in the art would expect different properties in the product as such amount varies. Since the component amount is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop a suitable carbon nanotube and spider or silkworm silk weight percentage. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

4. **Claims 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gould (*materialstoday*) in view of Smalley et al. (US 2003/0170166 A1).

5. With regard to **Claims 10-13**, Gould discloses nanocomposite fibrils produced when a polymer solution containing nanoparticles and spider silk protein undergo electrostatic spinning. Gould further discloses altering the electronic, magnetic, biological, and structural functions of the nanocomposite fibers via utilization of different types and amounts of nanoparticles (Gould, p. 47, 5th paragraph). Gould further teaches spider silk useful in biomedical (Gould, p. 42, 1st paragraph; p. 45, 3rd paragraph) and ballistic protection (Gould, p. 42, 1st paragraph; p. 46, 1st paragraph) applications.

6. Gould does not explicitly disclose carbon nanotubes (**Claim 10**); or a surfactant or dispersion agent (**Claim 10**).

7. With regard to **Claim 10**, carbon nanotubes are a well-known nanoparticle in the art, and it would have been obvious to one of ordinary skill in the art to modify the nanoparticle taught by Gould with carbon nanotubes because one of ordinary skill in the art could have pursued the known potential nanoparticle options within his or her technical grasp with a reasonable expectation of success.

8. With regard to **Claim 10**, Smalley discloses surfactants and dispersing agents used in the dispersion of carbon nanotubes in polymeric materials (Smalley, p. 6, 0045).

9. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art with the surfactant/dispersion agent of Smalley because one of ordinary skill in the art could have pursued the known potential options for maximizing process efficiency within his or her technical grasp with a reasonable expectation of success.

10. **Claims 1 and 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein (US 6,126,888) in view of Applicants' admitted prior art.

11. With regard to **Claim 1**, Goldstein discloses a fiber yarn may be prepared by mixing organic fibers such as rayon, silk, and KEVLAR with carbon nanotubes to form a composite yarn or fiber (Goldstein, c. 5, l. 33-36).

12. Goldstein does not explicitly disclose spider or silkworm silk (**Claim 1**) or a blast or ballistic protection device (**Claim 4**).

13. With regard to **Claim 1**, spider silk is a well-known high strength silk in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006).

14. With regard to **Claim 4**, blast or ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself.

15. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of Goldstein with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fibers and intended uses within his or her technical grasp with a reasonable expectation of success.

16. **Claims 3 and 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein (US 6,126,888) in view of Applicants' admitted prior art as applied to **Claim 1** above, and further in view of Smalley et al. (US 2003/0170166 A1).

17. The aforementioned applied art does not explicitly disclose a biomedical device (**Claim 3**) or an electroconducting fiber (**Claim 5**).

18. With regard to **Claim 3**, Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047).

19. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art for use in the biomedical device of Smalley because one of ordinary skill in the art could have pursued the known potential intended uses within his or her technical grasp with a reasonable expectation of success.

20. With regard to **Claim 5**, Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the "intrinsic electronic properties" of the carbon nanotubes make them electrical conductors (Smalley, p. 1, 0006; p. 7, 0047-0048).

21. Thus, the electroconductivity as taught by Smalley present in the composite fiber of the aforementioned prior art would have been obvious to one of ordinary skill in the art.

22. **Claims 1 and 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 6,265,466 B1) in view of Applicants' admitted prior art.

23. With regard to **Claim 1**, Glatkowski discloses the formation of composite fibers containing carbon nanotubes and crystalline polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin (Glatkowski, c. 3, l. 5-57 and 62-67; c. 4, l. 1-2). Glatkowski further teaches the composites may be formed into fibers via conventional processing methods (c. 4, l. 19-22).

24. Glatkowski does not explicitly disclose spider or silkworm silk (**Claim 1**) or a blast or ballistic protection device (**Claim 4**).

25. With regard to **Claim 1**, spider silk is a crystalline polymeric material of animal origin. Further, spider silk is a well-known high strength polymeric material in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006).

26. With regard to **Claim 4**, blast or ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself.

27. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of Glatkowski with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fibers and intended uses within his or her technical grasp with a reasonable expectation of success.

28. **Claims 2 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 6,265,466 B1) in view of Applicants' admitted prior art as applied to **Claim 1** above, and further in view of Senecal et al. (US 2001/0045547 A1).

29. The aforementioned prior art does not explicitly disclose electrospinning (**Claim 2**) or an electroconducting fiber (**Claim 5**).

30. With regard to **Claims 2 and 5**, Senecal discloses a process wherein composite fibers containing polymer materials and carbon nanotubes are formed via electrostatic spinning, providing inherent conductivity in the composite fiber (Senecal, "Abstract;" p. 3, 0027).

31. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fibers of the aforementioned prior art with the process of Senecal in order to process the composite into conductive fibers.

32. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 6,265,466 B1) in view of Applicants' admitted prior art as applied to **Claim 1** above, and further in view of Smalley et al. (US 2003/0170166 A1).

33. The aforementioned applied art does not explicitly disclose a biomedical device (**Claim 3**).

34. With regard to **Claim 3**, Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047).

35. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art for use in the biomedical device of Smalley because one of ordinary skill in the art could have pursued the known potential intended uses within his or her technical grasp with a reasonable expectation of success.

36. **Claims 6 and 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 6,265,466 B1) in view of Applicants' admitted prior art and Senecal et al. (US 2001/0045547 A1).

37. With regard to **Claim 6**, Glatkowski discloses the formation of composite fibers containing 0.001 to 15 wt% carbon nanotubes and crystalline polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin (Glatkowski, c. 3, l. 5-57 and 62-67; c. 4, l. 1-2). Glatkowski further teaches the composites may be formed into fibers via conventional processing methods (c. 4, l. 19-22).

38. Glatkowski does not explicitly disclose spider or silkworm silk being electrospun from a silk solution comprising approximately 8% to about 20% by weight of the spider silk or silkworm silk (**Claim 6**); a blast or ballistic protection device (**Claim 8**); or an electroconducting fiber (**Claim 9**).

39. With regard to **Claim 6**, spider silk is a crystalline polymeric material of animal origin. Further, spider silk is a well-known high strength polymeric material in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006).

40. With regard to **Claim 8**, blast or ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself.

41. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of Glatkowski with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fiber and intended use options within his or her technical grasp with a reasonable expectation of success.

42. With regard to **Claims 6 and 9**, Senecal discloses a process wherein composite fibers containing polymer materials and carbon nanotubes are formed via electrostatic spinning, providing inherent conductivity in the composite fiber (Senecal, "Abstract;" p. 3, 0027).

43. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fibers of the aforementioned prior art with the process of Senecal in order to process the composite into conductive fibers.

44. With regard to the spider or silkworm silk weight percentage range of **Claim 6**, an expected component amount is a result effective variable since one of ordinary skill in the art would expect different properties in the product as such amount varies. Since the component amount is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop a suitable spider or silkworm silk weight percentage. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

45. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 6,265,466 B1) in view of Applicants' admitted prior art as applied to **Claim 6** above, and further in view of Smalley et al. (US 2003/0170166 A1).

46. The aforementioned applied art does not explicitly disclose a biomedical device (**Claim 7**).

47. With regard to **Claim 7**, Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047).

48. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art for use in the biomedical device of Smalley because one of ordinary skill in the art could have pursued the known potential intended use options within his or her technical grasp with a reasonable expectation of success.

49. **Claims 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 6,265,466 B1) in view of Applicants' admitted prior art and Smalley et al. (US 2003/0170166 A1).

50. With regard to **Claim 10**, Glatkowski discloses the formation of composite fibers containing carbon nanotubes and crystalline polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin (Glatkowski, c. 3, l. 5-57 and 62-67; c. 4, l. 1-2). Glatkowski further teaches the composites may be formed into fibers via conventional processing methods and methods/techniques for incorporation of nanotubes into a polymer may be used (c. 4, l. 19-25).

51. Glatkowski does not explicitly disclose a surfactant or dispersion agent (**Claim 10**); spider or silkworm silk (**Claim 10**); a biomedical device (**Claim 11**); a blast or ballistic protection device (**Claim 12**); or an electroconducting fiber (**Claim 13**).

52. With regard to **Claim 10**, spider silk is a crystalline polymeric material of animal origin. Further, spider silk is a well-known high strength polymeric material in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006).

53. With regard to **Claim 12**, blast or ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself.

54. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of Glatkowski with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fiber and intended use options within his or her technical grasp with a reasonable expectation of success.

55. With regard to **Claim 10**, Smalley discloses surfactants and dispersing agents used in the dispersion of carbon nanotubes in polymeric materials (Smalley, p. 6, 0045).

56. With regard to **Claims 11 and 13**, Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047) and wherein the "intrinsic

electronic properties" of the carbon nanotubes make them electrical conductors (Smalley, p. 1, 0006; p. 7, 0047-0048). Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art with the surfactant/dispersion agent and potential uses of Smalley because one of ordinary skill in the art could have pursued the known potential options for maximizing process efficiency and the known potential intended uses within his or her technical grasp with a reasonable expectation of success. Further, the presence of electroconductivity as taught by Smalley in the composite fiber of the aforementioned prior art would have been obvious to one of ordinary skill in the art.

57. **Claims 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein (US 6,126,888) in view of Applicants' admitted prior art and Smalley et al. (US 2003/0170166 A1).

58. With regard to **Claim 10**, Goldstein discloses a fiber yarn may be prepared by mixing organic fibers such as rayon, silk, and KEVLAR with carbon nanotubes to form a composite yarn or fiber (Goldstein, c. 5, l. 33-36).

59. Goldstein does not explicitly disclose a surfactant or dispersion agent (**Claim 10**); spider or silkworm silk (**Claim 10**); a biomedical device (**Claim 11**); or a blast or ballistic protection device (**Claim 12**); or an electroconducting fiber (**Claim 13**).

60. With regard to **Claim 10**, spider silk is a well-known high strength silk in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006).

61. With regard to **Claim 12**, blast or ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself.

62. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of Goldstein with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fiber and intended use options within his or her technical grasp with a reasonable expectation of success.

63. With regard to **Claim 10**, Smalley discloses surfactants and dispersing agents used in the dispersion of carbon nanotubes in polymeric materials (Smalley, p. 6, 0045).

64. With regard to **Claims 11 and 13**, Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047) and wherein the "intrinsic electronic properties" of the carbon nanotubes make them electrical conductors (Smalley, p. 1, 0006; p. 7, 0047-0048). Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art with the surfactant/dispersion agent and potential uses of Smalley because one of ordinary skill in the art could have pursued the known potential options for maximizing process efficiency and the known potential intended uses within his or her technical grasp with a reasonable expectation of success. Further, the presence of electroconductivity as

taught by Smalley in the composite fiber of the aforementioned prior art would have been obvious to one of ordinary skill in the art.

Response to Amendments

Applicants' amendments filed October 7, 2008, with respect to the Specification and Claims have been fully considered and are accepted. The objections to the Specification, filed May 7, 2008, have been withdrawn.

Response to Arguments

65. Applicants' arguments filed October 7, 2008, with respect to the rejection of **Claims 1-5** under 35 U.S.C. 103(a) as being unpatentable over Gould (Applicants' response, 10/7/08, p. 8-10) have been fully considered but they are not persuasive. In particular, Applicants' argument regarding the validity of Gould as a prior art reference is not persuasive. "The term "others" in 35 U.S.C. 102(a) refers to any entity which is different from the inventive entity. The entity need only differ by one person to be "by others." This holds true for all types of references eligible as prior art under 35 U.S.C. 102(a) including publications as well as public knowledge and use. Any other interpretation of 35 U.S.C. 102(a) "would negate the one year [grace] period afforded under § 102(b)." In re Katz, 687 F.2d 450, 215 USPQ 14 (CCPA 1982)." *See MPEP 2132.01(III).* Further, Gould was used in its entirety and the reference to Dr. Frank Ko does not constitute the entirety of the reference which is attributed to another. Acknowledgment is made of Applicants' argument that Gould does not disclose carbon

nanotubes (Applicants' response, 10/7/08, p. 9). However, Gould discloses nanocomposite fibrils produced when a polymer solution containing nanoparticles and spider silk protein undergo electrostatic spinning. Gould further discloses altering the electronic, magnetic, biological, and structural functions of the nanocomposite fibers via utilization of different types and amounts of nanoparticles (Gould, p. 47, 5th paragraph). Carbon nanotubes are a well-known nanoparticle in the art, and it would have been obvious to one of ordinary skill in the art to modify the nanoparticle taught by Gould with carbon nanotubes because one of ordinary skill in the art could have pursued the known potential nanoparticle options within his or her technical grasp with a reasonable expectation of success. In response to Applicants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In response to Applicants' argument that the references fail to show certain features of Applicants' invention, it is noted that the features upon which Applicants rely (i.e., synthetic fibril component weight percentages (Applicants' response, 10/7/08, p. 10)) were not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In any event,

an expected component amount is a result effective variable since one of ordinary skill in the art would expect different properties in the product as such amount varies. Since the component amount is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop suitable synthetic fibril component weight percentages. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). This argument is moot in view of the new ground(s) of rejection.

66. Applicants' arguments filed October 7, 2008, with respect to the rejection of **Claims 1 and 4** under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Applicants' admitted prior art and the rejection of **Claims 3 and 5** under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Applicants' admitted prior art and further in view of Smalley have been fully considered but they are not persuasive (Applicants' response, 10/7/08, p. 11-13). Acknowledgment is made of Applicants' argument that Goldstein does not disclose spider or silkworm silk or a blast or ballistic protection device (Applicants' response, 10/7/08, p. 11-12). However, Goldstein discloses a fiber yarn may be prepared by mixing organic fibers such as rayon, silk, and KEVLAR with carbon nanotubes to form a composite yarn or fiber (Goldstein, c. 5, l. 33-36). Spider silk is a well-known high strength silk in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006). Blast and ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of

Goldstein with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fiber and intended use options within his or her technical grasp with a reasonable expectation of success.

67. In response to Applicants' argument that one of ordinary skill in the art would not have been motivated to modify the composite fiber of Goldstein with spider silk based upon its recognized properties as a wonder fiber for its unique combination of high strength and rupture elongation (Applicants' response, 10/7/08, p. 12), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Goldstein discloses a fiber yarn may be prepared by mixing organic fibers such as rayon, silk, and KEVLAR with carbon nanotubes to form a composite yarn or fiber (Goldstein, c. 5, l. 33-36). Spider silk is a well-known high strength silk in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006). It would have been obvious to one of ordinary skill in the art to modify the composite fiber of Goldstein with the spider silk of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fiber options within his or her technical grasp with a reasonable expectation of success. Further, it is noted that the examiner did not use spider silk's "recognized properties as a wonder fiber for its unique combination of high strength and

rupture elongation" (Applicants' response, 10/7/08, p. 12) as a basis for motivation to combine references.

68. In response to Applicants' argument that the rupture elongation properties of spider silk would not be a motivation to incorporate the fiber into the gas mantles and ceramic structure of Goldstein (Applicants' response, 10/7/08, p. 12), it is noted that the examiner did not use the rupture elongation properties of spider silk as a motivation to combine references. Further, the rejection is based on a combination of references. The disclosure of a reference is not limited to its explicit teachings; rather, references are looked at in view of what their combination may reasonably suggest. In any event, the intended use of the composite fiber is not seen to limit the fiber itself.

69. In response to Applicants' argument that Smalley does not remedy the deficiencies in the combined teachings of Goldstein and Applicants' admitted prior art since Smalley does not teach or suggest combining spider or silkworm silk with carbon nanotubes (Applicants' response, 10/7/08, p. 12), it is noted that the examiner did not use Smalley to remedy the aforementioned deficiencies nor to explicitly teach combining spider or silkworm silk with carbon nanotubes. Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047) and wherein the "intrinsic electronic properties" of the carbon nanotubes make them electrical conductors (Smalley, p. 1, 0006; p. 7, 0047-0048). Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art for

use in the biomedical device of Smalley because one of ordinary skill in the art could have pursued the known potential intended use options within his or her technical grasp with a reasonable expectation of success. Further, the presence of electroconductivity as taught by Smalley in the composite fiber of the aforementioned prior art would have been obvious to one of ordinary skill in the art.

70. In response to Applicants' argument that the references fail to show certain features of Applicants' invention, it is noted that the features upon which Applicants rely (i.e., synthetic fibril component weight percentages (Applicants' response, 10/7/08, p. 13)) were not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In any event, Glatkowski discloses the formation of composite fibers containing 0.001 to 15 wt% carbon nanotubes and crystalline polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin (Glatkowski, c. 3, l. 5-57 and 62-67; c. 4, l. 1-2). Further, an expected component amount is a result effective variable since one of ordinary skill in the art would expect different properties in the product as such amount varies. Since the component amount is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop suitable synthetic fibril component weight percentages. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). This argument is moot in view of the new ground(s) of rejection.

71. Applicants' arguments filed October 7, 2008, with respect to the rejection of **Claims 1 and 4** under 35 U.S.C. 103(a) as being unpatentable over Glatowski in view of Applicants' admitted prior art, the rejection of **Claims 2 and 5** under 35 U.S.C. 103(a) as being unpatentable over Glatowski in view of Applicants' admitted prior art and further in view of Senecal, and the rejection of **Claim 3** under 35 U.S.C. 103(a) as being unpatentable over Glatowski in view of Applicants' admitted prior art and further in view of Smalley have been fully considered but they are not persuasive (Applicants' response, 10/7/08, p. 14-17). Acknowledgment is made of Applicants' argument that Glatowski does not disclose spider or silkworm silk or a blast or ballistic protection device (Applicants' response, 10/7/08, p. 14-15). However, Glatkowski discloses the formation of composite fibers containing polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin (Glatkowski, c. 3, l. 5-57). Glatkowski further teaches the composites may be formed into fibers via conventional processing methods (c. 4, l. 19-22). Spider silk is a polymeric material of animal origin. Further, spider silk is a well-known high strength polymeric material in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006). Blast and ballistic protection devices are merely known uses of silk fibers, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0005-0006). The intended use of the composite fiber is not seen to limit the fiber itself. Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of Glatkowski with the spider silk and intended use of Applicants' admitted prior art because one of ordinary skill in the art could have

pursued the known potential fiber and intended use options within his or her technical grasp with a reasonable expectation of success.

72. In response to Applicants' argument that one of ordinary skill in the art would not have been motivated to modify the composite fiber of Glatowski with spider silk based upon its recognized properties as a wonder fiber for its unique combination of high strength and rupture elongation (Applicants' response, 10/7/08, p. 15), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Glatkowski discloses the formation of composite fibers containing polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin (Glatkowski, c. 3, l. 5-57). Glatkowski further teaches the composites may be formed into fibers via conventional processing methods (c. 4, l. 19-22). Spider silk is a polymeric material of animal origin. Further, spider silk is a well-known high strength polymeric material in the art, as evidenced by the admitted prior art disclosed in the instant specification (S. p. 1, 0004-0006). It would have been obvious to one of ordinary skill in the art to modify the composite fiber of Glatkowski with the spider silk of Applicants' admitted prior art because one of ordinary skill in the art could have pursued the known potential fiber options within his or her technical grasp with a reasonable

expectation of success. Further, it is noted that the examiner did not use spider silk's "recognized properties as a wonder fiber for its unique combination of high strength and rupture elongation" (Applicants' response, 10/7/08, p. 15) as a basis for motivation to combine references.

73. In response to Applicants' argument that the rupture elongation properties of spider silk would not be a motivation to incorporate the fiber into the electromagnetic shielding composites of Glatkowski (Applicants' response, 10/7/08, p. 15), it is noted that the examiner did not use the rupture elongation properties of spider silk as a motivation to combine references. Further, the rejection is based on a combination of references. The disclosure of a reference is not limited to its explicit teachings; rather, references are looked at in view of what their combination may reasonably suggest. In any event, the intended use of the composite fiber is not seen to limit the fiber itself.

74. In response to Applicants' argument that neither Senecal nor Smalley remedy the deficiencies in the combined teachings of Glatkowski and Applicants' admitted prior art since neither Senecal nor Smalley teach or suggest combining spider or silkworm silk with carbon nanotubes (Applicants' response, 10/7/08, p. 15), it is noted that the examiner did not use Senecal nor Smalley to remedy the aforementioned deficiencies nor to explicitly teach combining spider or silkworm silk with carbon nanotubes. Smalley discloses carbon nanotubes as possible strengthening reinforcement in composite materials, wherein the carbon nanotube composite materials can be applied in biologically-compatible devices that are implanted into living organisms (Smalley, p. 6, 0047) and wherein the "intrinsic electronic properties" of the carbon nanotubes make

them electrical conductors (Smalley, p. 1, 0006; p. 7, 0047-0048). Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fiber of the aforementioned prior art for use in the biomedical device of Smalley because one of ordinary skill in the art could have pursued the known potential intended use options within his or her technical grasp with a reasonable expectation of success. Further, the presence of electroconductivity as taught by Smalley in the composite fiber of the aforementioned prior art would have been obvious to one of ordinary skill in the art. Senecal discloses a process wherein composite fibers containing polymer materials and carbon nanotubes are formed via electrostatic spinning, providing inherent conductivity in the composite fiber (Senecal, "Abstract;" p. 3, 0027). Thus, it would have been obvious to one of ordinary skill in the art to modify the composite fibers of the aforementioned prior art with the process of Senecal in order to process the composite into conductive fibers.

75. In response to Applicants' argument that the references fail to show certain features of Applicants' invention, it is noted that the features upon which Applicants rely (i.e., synthetic fibril component weight percentages (Applicants' response, 10/7/08, p. 16)) were not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In any event, Glatkowski discloses the formation of composite fibers containing 0.001 to 15 wt% carbon nanotubes and crystalline polymeric materials including natural and synthetic polymers, as well as polymeric materials of plant, animal, or microbial origin

(Glatkowski, c. 3, l. 5-57 and 62-67; c. 4, l. 1-2). Further, an expected component amount is a result effective variable since one of ordinary skill in the art would expect different properties in the product as such amount varies. Since the component amount is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop suitable synthetic fibril component weight percentages. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). This argument is moot in view of the new ground(s) of rejection.

Conclusion

1. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is (571) 270-3586. The examiner can normally be reached Monday-Friday 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wayne Langel/
Primary Examiner, Art Unit 1793

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/Brittany M Martinez/
Examiner, Art Unit 1793